Remarks

The Applicants acknowledge the rejection of Claims 1 – 14 under 35. U.S.C. §112, second paragraph. The Applicants note with appreciation the Examiner's helpful and detailed comments concerning the rejection. Nonetheless, the Applicants respectfully submit that no further structure is needed in Claim 1 to satisfy §112. Further, the Applicants' recitation in Claim 1 is not missing an element critical to the invention that would patentably distinguish it from the known prior art. Claim 1 specifically recites a polyester multifilament yarn comprising a plurality of polytrimethylene terephthalate filaments that form the yarn. This is the structure that is required under §112. The yarn has specific characteristics that are neither disclosed, taught nor suggested by the prior art. Moreover, those characteristics are not inherent in the prior art as demonstrated by the differences in the process in producing the polyester multifilament yarn of Claim 1 and the processes of the prior art.

The Applicants accordingly respectfully submit that 35 U.S.C. §112 is not linked to distinguishing over the prior art. Those are separate standards that are addressed separately. With respect to the §112 rejection, Claims 1-14 need to be definite as defined in the statute. They are for the reasons set forth above. There is structure and there are characteristics associated with the structure. Nothing else is required.

On the other hand, the claims must be patentable over the prior art under §§102 and 103. The Applicants have previously pointed to differences in the processes of producing yarns in the prior art over the processes used to produce the polyester multifilament yarn of Claim 1. That is all that is required to distinguish Claim 1 from the prior art. The Applicants have shown that following the process in their Specification versus the processes of the prior art there is no inherent similarity because those processes are different and one of ordinary skill in the art could reasonably conclude

that the physical characteristics would be different. Inherency requires that the characteristics necessarily be the same. The Applicants have shown that there are different processes in making the yarns between Claim 1 to the prior art which would lead to the reasonable conclusion that the claimed characteristics would not necessarily be the same.

In any event, referring back to the §112 rejection, the Applicants have amended Claim 1 to include specific ones of the above mentioned process steps to further define the subject matter of this invention. Withdrawal of the rejection of Claims 1-14 is respectfully requested.

The Applicants acknowledge the rejection of Claims 15-19, 21-22 and 24. The Applicants have amended Claim 15 to provide appropriate antecedent basis and respectfully submit that those Claims are also in accordance with §112, second paragraph. Withdrawal of the rejection is respectfully requested.

The Applicants acknowledge the rejection of Claims 1-9, 12-13 and 25-28 under 35 U.S.C. §103 over EP'422. As noted above, the Applicants have added new clarifying subject matter to Claim 1 which is largely taken from original Claim 15, not rejected under §103 over EP'422. The Applicants therefore respectfully submit that EP'422 is no longer applicable to Claims 1-9, 12-13 and 25-28. Withdrawal of the rejection is respectfully requested.

The Applicants acknowledge the rejection of Claim 14 under 35 U.S.C. §103 over the hypothetical combination of JP'747 with EP'422. In that regard, the Applicants enclose a partial translation of JP'747 for the Examiner's convenience. In any event, the Applicants respectfully submit that the rejection is inapplicable to Claim 14 in view of the above mentioned amendments to Claim 1. Withdrawal of the rejection is respectfully requested.

The Applicants acknowledge the rejection of Claims 15-19, 21-22 and 24 under 35 U.S.C. §103 over the hypothetical combination of US'172 with EP'711. The Applicants note with

appreciation the Examiner's helpful comments concerning the hypothetical combination. Nonetheless, the Applicants respectfully submit that one of ordinary skill in the art would not make the hypothetical combination as hypothesized in the rejection for the reasons set forth in detail below.

EP'711 relates to a process for producing a high quality bulked continuous filament yarn from PTT. US'172 relates to a process for producing a high-strength low-elongation polyester yarn for tire cords. Both of EP'711 and US'172 are very different from the subject matter of Claims 15-19, 21-22 and 24 in the intended yarn, and also different in the production process for the reasons set forth below.

EP'711 discloses a process for producing a bulked continuous filament yarn (BCF yarn) from PTT. In the spinning-drawing process of Fig. 1, a spun yarn is passed in contact with denier control rolls 4 and 5, and drawn in the section between feed roll 7 and draw roll 9 for the first time, then drawn in the section between draw rolls 9 and 11 for a second time. The drawn yarn 12 is passed in contact with optional relax roller 13 to stabilize the drawn yarn, and then wound by optional winder 15. Subsequently, the PTT drawn yarn is subjected to bulk treatment. In the process of spinning-drawing of Fig. 1, the spinning speed corresponds to the speed of the denier control rolls 4 and 5, and the speed is as very low such as 220 to 230 m/min in Examples 1 and 2.

In the spinning-drawing-bulk treatment process of Fig. 2, a spun yarn is passed in contact with non-heated rolls 25 and 26 and drawn in the section between feed roll 28 and draw roll 29 for the first time, drawn in the section between draw rolls 29 and 30 for the second time, pre-heated by heated rolls 34 and 35, subjected to bulk processing by texturing air jet 37 and cooling drum 38, subjected to entangling treatment by optional entangler 44 for the purpose of better processing downstream, then being wound. In this process, the spinning speed corresponds to the speed of the

non-heated roll 25, and the speed is as very low such as 211 m/min in Example 5.

The first draw ratio is from 1.05 to 2 times, and the second draw ratio is 2.2 times or more of the first draw ratio. For example, in Example 1 (carried out in the process of Fig. 1), the first draw ratio is from 1.35 to 1.76 times, and the second draw ratio is from 2.70 to 3.29 times. In that case, the total draw ratio is from 4.44 to 4.75 times. In Example 5 (carried out in the process of Fig. 2), the first draw ratio is 330/290 = 1.14 times, and the second draw ratio is 1100/330 = 3.33 times. The total draw ratio in that case is 1100/290 = 3.79 times.

The production process described in EP'711 is either the process of Fig. 1 consisting of taking up at a very low spinning speed, drawing in two steps (the total draw ratio obtained by multiplying the first draw ratio by the second draw ratio is as high as more than about 4.4 times), in succession, passing in contact with an optional relax roller, and winding, or the process of Fig. 2 consisting of taking up at a very low spinning rate, drawing in two steps (the total draw ratio obtained by multiplying the first draw ratio by the second draw ratio is as high as about 3.8 times), in succession, bulk processing, entangling treatment and winding.

In the EP'711 process, the first drawing is carried out at a low draw ratio, but the subsequent second drawing is carried out at a high draw ratio. Hence, the total draw ratio is high. Therefore, the EP'711 process employs spinning at a very low speed followed by drawing at a high draw ratio, and does not employ spinning at a high speed followed by drawing at a low ratio.

Furthermore, in the spinning-drawing process of Fig. 1, drawing is followed by passing in contact with an optional relax roller, and then by winding. However, the relaxation treatment by the relax roller is performed for the purpose of stabilizing the drawn yarn, namely, for process stabilization, and is evidently different from that performed for the purpose of controlling the fiber structure (lowering the Young's modulus and the differential Young's modulus at an elongation of 3

to 10%) in the Applicants' Claim 15. Both the processes are seriously different in object and effect. Furthermore, in Fig. 1 of EP'711, no entangling treatment is performed in the section between the optional relax roller and winding.

In the case of the spinning-drawing-bulk treatment process of Fig. 2 in which entangling treatment is performed before winding, bulk processing is performed after drawing without passing in contact with the relax roller, and in succession, entangling treatment is performed for the purpose of better processing downstream. In the production process of Fig. 2, entangling treatment is performed to entangle the yarn. On the contrary, in Claim 15, an entangling device is provided to enhance the relaxation rate achieved immediately before entangling treatment. In other words, the entangling treatment in succession to relaxation treatment allows a desired high relaxation rate to be achieved. (See page 13, line 32 to page 33, line 10 of the Applicants' Specification).

EP'711 does not teach or suggest that drawing is followed by passing in contact with a relax roller, then by entangling treatment, and subsequently by winding.

Therefore, EP'711 does not teach or suggest the basic process of Claim 15 comprising high speed spinning, drawing at a low ratio, relaxation using a relax roller, and entangling treatment and winding.

US'172 discloses high speed spinning, two-step drawing, relaxation and entangling treatment. However, the process is employed to produce a high-strength low-elongation polyester yarn for tire cords. The speed of the high speed spinning is from 1000 to 4000 m/min. The draw ratio in the first drawing is from 1.5 to 2.5 times, and that in the second drawing is from 1.3 to 1.7 times. Hence, the total draw ratio is more than about twice. The elongation of the obtained polyester yarn is as low as 14.5% (Example 4) or less, and the strength is as high as 8.38 g/d (Example 4). The yarn has a low elongation and a high strength with a high Young's modulus. Furthermore, a low

elongation, high Young's modulus and high strength are properties required for the polyester yarn used for tire cords.

Therefore, US'172 discloses a process for producing a polyester yarn from a low elongation, high Young's modulus and high strength as in the case of Takahashi (US 4,956,446 cited in the previous Official Action).

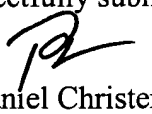
The Applicants respectfully submit that such a process for producing a polyester yarn with a low elongation, high Young's modulus and high strength cannot be applied as a process for producing a yarn with a relatively high elongation (40% or more) and low Young's modulus, and cannot be usefully referred to either.

Moreover, US'172 does not specify the kind of the polyester, but, instead, discloses "polyethylene terephthalate" at column 3, lines 38-39. Furthermore, the melt spinning temperature is as high as 299°C (Table 1) and the strength of the obtained yarn is as high as 8.38 g/d (Example 4). Thus, the polyester used is believed to be polyethylene terephthalate also used for tire cord applications. Meanwhile, since PTT is not suitable for tire cord applications in view of its polymeric properties, it cannot be considered that the process of US'172 can be applied to PTT.

Since the process of US'172 is intended to produce a high-strength polyethylene terephthalate yarn for tire cord as described above, it cannot be usefully referred to at all to enhance the soft stretchability and flexibility of a PTT filament yarn. Thus, one skilled in the art would not hypothetically combine US'172 with EP'711. The Applicants therefore respectfully request withdrawal of the rejection of Claims 15-19, 21-22 and 24 over the hypothetical combination.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



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